LINE-1 Retrotransposition in the Nervous System.

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Public Summary:
Long interspersed element-1 (LINE-1 or L1) is a repetitive DNA retrotransposon capable of duplication by a copy-and-paste genetic mechanism. Scattered throughout mammalian genomes, L1 is typically quiescent in most somatic cell types. In developing neurons, however, L1 can express and retrotranspose at high frequency. The L1 element can insert into various genomic locations including intragenic regions. These insertions can alter the dynamic of the neuronal transcriptome by changing the expression pattern of several nearby genes. The consequences of L1 genomic alterations in somatic cells are still under investigation, but the high level of mutagenesis within neurons suggests that each neuron is genetically unique. Furthermore, some neurological diseases, such as Rett syndrome and ataxia telangiectasia, misregulate L1 retrotransposition, which could contribute to some pathological aspects. In this review, we survey the literature related to neurodevelopmental retrotransposition and discuss possible relevance to neuronal function, evolution, and neurological disease.

Scientific Abstract:
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